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E/ECA/TRANS/20

REPORT OF THE JOINT ECA/ADB/WORLD BANK HIGHWAY MAINTENANCE SEMINAR I

(Abidjan, Ivory Coast, 11 to 14 June 1985)

ORGANIZATION

1. The joint ECA/World Bank/ADB Highway Maintenance Seminar for West and Central Afrifa was held at Abidjan, the Ivory Coast, from 11-14 and 17-21 June 1985. The seminar was financially supported by the Canadian International Development Agency and also technically supported by the United Kingdom Transport and Road Research Laboratory.

ATTENDANCE AND PARTICIPATION

2. The first part of the seminar (11-14 June 1985) was attended by the following countries.

1. Benin
2. Cameroon
3. Central African Republic
4. Congo
5. Ivory Coast
6. Gambia
7. Ghana
8. Guinea Bissau
9. Liberia
10. Niger
11. Nigeria
12. Sierra Leone
13. Togo

OPENING OF THE SEMINAR

3. In his introductory address, Dr. A.R. MOUSSA, ADB Vice-President and Acting President welcomed the officials and delegates. He stressed the interest of the ADB Group in Road Maintenance because it is a vital economic sector which is inadequately cared for by African Governments and said he was happy that decision-makers from member countries were being given the opportunity, for the first time, to exchange views on this topical issue and develop a consensus on the most appropriate strategies to tackle the problem. He underscored the disastrous effects of inadequate highway maintenance on the national economy with particular emphasis on implication for the foreign exchange earnings and, mismatches of supply and demand of goods on the national market. He quoted some of the highway maintenance projects financed by ADB and concluded that in view of the current heavy debt burden, general economic recession in Africa, and the limited financial resources available, it has become a must for African Governments to preserve their national heritage such as their highway network.

4. In his opening remarks, Mr. Hans Apitz of the World Bank, and Moderator of the seminar said that he was happy to note the good attendance by the relevant people to discuss this topic. Referring to the ECA assessment of the impending economic situation in Africa as a nightmare threatening African economies until the year 2,000, he explained that the World Bank prepared an action programme for urgent implementation in Sub-Saharan African which is designed to alleviate the problems facing the continent. Some of the most urgent steps include the following:

(1) to avoid investments which do not show adequate rate of return;
(2) enhance effectiveness of existing infrastructures;
(3) increase efforts for proper maintenance of roads and infrastructure.

The current seminar is a follow-up to the recent round table in Rome in February 1985 and of the meeting of financing sources for road maintenance in Sub-Saharian Africa held last March in London. The current meeting, he concluded is aimed at concretizing the proposals of the two meetings by evolving strategies to be implemented in the near future.

5. On behalf of the Executive Secretary of the ECA, Mr. Shifarraw Bizuneh, ECA representative at the Seminar expressed his gratitude to the Government of Ivory Coast and the African Development Bank for their hospitality and to the Governments of Canada and Britain as well as to the World Bank for their technical and financial support to the organization of the Seminar. He reminded the participants that independent African ocountries had to invest large amounts to restructure the outward looking orientation of the colonial highway network. It was regrettable that as a result of poor maintenance the network recently constructed had deteriorated. It is now time to institute effective and efficient road maintenance using where feasible, labour intensive methods. On its part ECA alongside with interested donor countries is prepared to support policies of effective highway maintenance and is pleased to announce its forthcoming "Regional Maintenance Conference" scheduled to be held in Tunis at the end of the year. The Conference would review the ECA handbook in Road Maintenance which had been extensively distributed. In view of the severe economic recession, desertification, and internal civil strife in Africa, the current Seminar on Highway Maintenance is convened at a particularly opportune time.

6. In his opening address, Mr. ADAMA COULIBALY, representing the Ivorian Minister for Public Works, Construction, Post and Telecommunications welcomed all the participants to the Ivory Coast and extended special thanks to the ADB for its continued efforts towards economic and social development and training of relevant staff in Africa. He also thanked other organizations, i.e. the World Bank, and the ECA.

7. The topic for discussion related to a basic principle of management which should not be neglected but rather adhered to with utmost seriousness. The approach to the problem should be systematic particularly since effective highway maintenance is a profitable exercise for countries. It was a fact that highway construction and maintenance requires large amounts of money but strict and methodic management of highways should ensure good performance of the whole highway network. Most cost effective techniques and businesslike management approaches should be used in that area. It is essential that investments aimed at preserving the national heritage in the sector of highway , work should be given special priority especially in the current economic and financial context. During the last decade, inadequate resources have been devoted to highway maintenance but the trend should be reversed. Road maintenance in African countries is generally done on force account basis but recourse to contractors is developing and should be encouraged as an effective solution and an encouragement to small-scale national enterprises. It is essential that the governments develop most effective programming and management styles to ensure optimum utilization and control of existing material, rational organization, suited to the specific conditions, and proper stimulation to ensure dynamism. Mr. COULIBALY participants to pool their experiences so as to come up with the best strategies and solutions to the highway maintenance problem. He then declared the Highway Maintenance Seminar open.

8. ADOPTION OF THE PROGRAMME

The Seminar adopted the following programme:

Sunday

11:00 a.m. - 08:00 p.m.	Registration
7:00 p.m.	Welcome receptions

Monday

08:45 a.m	Arrival of participation
09:00 a.m.	Opening of the meeting
	(1) Opening address by the African Development Bank
	(2) Remarks by World Bank Moderator
	(3) Address by the Representative of the Economic Commission for Africa
	(4) Welcome address by the Minister of the Host country, the Ivory Coast
09:30 a.m.	1. Address by TRRL - Sub-Saharan Road Maintenance Crisis (P. Robinson)
	There is a road maintenance crisis in Sub-Saharan Africa today, and it is growing. There may be many causes. In this seminar we will concentrate on two broad sets of causes:
	(a) Inadequate levels of funding;
	(b) Inefficiencies in utilization of existing funding.
10:00 a.m.	Discussion
10:30 a.m.	Break
10:45 a.m.	Address by World Bank (C.C. Harral)
	2. How much should we spend on maintenance and what are the priorities. A contribution from engineering-economic analysis:
	a) Economic benefits of road maintenance

Monday (Cont'd)

	b) Optimizing road maintenance
	c) Estimating financial requirements for maintenance
	d) Highway sector priorities under budget constraints
	e) Need to link capital project planning with future maintenance demands.
11:30 a.m.	Presentation by ADB (HOYAH)
	3. "Economic and financial aspects of Road Maintenance"
12:00 a.m.	Discussion
12:30 p.m.	Lunch
2:00 p.m.	4. Task groups: How can we best provide finance for improved road maintenance?
	a) Intra-sectoral reallocation of resources from new construction to maintenance and rehabilitation?
	b) Increase inter-sectoral allocation to highways?
	i) With or without increase in road user taxes?
	ii) Earmarking of revenues?
	c) Role of foreign aid.
3:30 p.m.	Break
4:00 p.m.	Reporting from Task Groups and Discussion
5:30 p.m.	Close

Tuesday

9:00 a.m.	5. Integration of Current and Capital Budgeting (L. Garamfalvi, IMF)
10:00 a.m.	Discussion
10:30 a.m.	Break
11:00 a.m.	6. Ways to improve budgetary control/ disbursement (L. Garmfalvi, IMF) a) Reduce irregularity of flow of funds b) Provide easier access to foreign exchange for spare parts, fuel, bitumen etc.
11:30 a.m.	7. Country Paper on Financing for Road Maintenance (Central African Republic)
12:00 p.m.	Discussion
12:30 p.m.	Lunch
2:00 p.m.	8. Task Groups on Planning and Budgeting
3:30 p.m.	Break
4:00 p.m.	9. Reporting from Task Groups and Discussion
5:30 p.m.	Close

Wednesday

Organization and Management Issues

9:00 a.m.	10. "How can we reduce the unit costs of road maintenance and stretch available budgets further?"

Organization and management reforms to answer the following questions:

a) How to attract, develop and retain able people?

b) How to provide them with strong incentives for efficiency?

c) How to free them from stifling bureaucratic controls?

d) How to provide them with the management information they need?

11. Approach one: Introduction of competitive forces (S. Demissie)

Reorganize government road authorities, establishing strong capabilities for management of contract maintenance, split-off force account execution capabilities into independent countracting bodies (organized along commercial lines with commercial accounting), and thrust them into competition with private contractors.

9:30 a.m. Country experience: (Nigeria)

10:00 a.m. Country experience: (Ghana)

10:30 a.m. Break

11:00 a.m. 12. Approach two: Revitalizing the public authority

13. Stress development of accountability, incentives and flexibility. (A. Cisse)

11:30 a.m. 14. Country experience: Puerto Rico

12:00 p.m. Discussion

12:30 p.m. Lunch

2:00 p.m. 15. Equipment Management and Spare Parts Procurement (P. Morris)

2:30 p.m. 16. Country Presentation on Equipment Management (Cameroon)

3:00 p.m. Discussion

3:30 p.m. Break

3:45 p.m. 17. Appropriate technology and the lengthman system

4:00 p.m. Discussion

4:30 p.m.	18. Personnel Management and Training (J.M. Verdier)
5:00 p.m.	Discussion
5:30 p.m.	Close
8:30 p.m.	Dinner: - Address by D. Bihute, ADB Vice President

Thursday

9:00 a.m.	19. Road Maintenance Survey for West and Central African Countries (M. Mason)
9:45 p.m.	20. Task Groups on Organization and Management
10:30 a.m.	Break
11:30 a.m.	21. Reporting from Task Groups and Discussion Country Report - Ivory Coast
12:30 p.m.	Lunch
2:00 p.m.	22. Field trip to Ivory Coast Training Center and Training Production Brigades
4:00 p.m.	Discussion
5:30 p.m.	Close

Friday

9:00 a.m.	23. Management information system and monitoring (Morris)
9:30 a.m.	24. Workshop on questionnaire (M. Mason)
12:30 p.m.	25. Presentation of Task Group Reports and Discussion
2:30 p.m.	26. Mr. Bako Moussa, Niger "Applying the art of politics to forge a consensus for road maintenance"
3:30 p.m.	Break
5:00 p.m.	27. Summary of Seminar Findings (Moderator)
5:30 p.m.	Close

PROCEEDINGS

Sub-Saharan Road Maintenance Crisis

9. In his lecture on the road maintenance crisis in Sub-Saharan Africa, Mr. Richard Robinson of the United Kingdom Transport and Road Research Laboratory said that in many African countries, the problem of maintaining the road network has increased at an alarming rate over the last few years. A road condition survey carried out in 1984 by the World Bank confirms the suspicion that a large proportion of the road network is in poor condition. The deterioration of the network is taking place partly because the new roads built in the 1960's and 1970's are now reaching the end of their design lives and partly because of lack of funds, shortages of trained staff and inefficient operations. The 1980-82 world recession affected sub-Saharan Africa more severely than other parts of the world.

10. Over the whole region, a shortfall of about US$ 500 million a year in funding for road maintenance (mainly periodic maintenance) and a further US$ 300 million a year for pavement strengthening has resulted in about one third of the value of the network being lost, some US$ 15 billion in all. The loss to road users in increased vehicle operating costs is of even larger magnitude.

11. Measures to save road networks from further deterioration include (i) the concentration of resources on road maintenance, rather than new construction, and concentration of maintenance activities on the essential road network, (ii) greater use of non-government bodies in road maintenance; (iii) increasing the efficiency of government operations; and (iv) reducing the diversion of resources. In the richer countries, reduction of new construction and more efficient operations could be enough to right the situation, but in the poorer countries, outside aid will be required for some time to come to put roads into a maintainable condition.

12. In all countries, the road maintenance operation is likely to improve as a result of introducing competition and incentives, making responsibilities obvious and enforcing accountability at all levels.

DISCUSSION

13. In the ensuing discussion, a representative of Nigeria remarked that his country had made bold attempts to attract local contractors into road maintenance work by granting them mobilization advances of 20 per cent of the contract amount; but then, when a few contractors got the advance and disappeared without producing any satisfactory work the Government had to abandon any such price incentives. The dilemma was that, without financial encouragement not many local contractors can be lured into road maintenance. However, the contracting system was continuing, with generally good results. (This item would be explored further under its appropriate heading).

14. The representative of Sierra Leone observed that as along as donors were willing to support new construction, there would always be some construction projects in member countries.

15. The representative of the World Bank remarked that since reallocation of donor funds from construction to maintenance had been agreed upon at the London Donor's meeting, close co-operation between each donor and recepient country was required to place higher priority on maintenance rather than new construction.

16. The representative of Benin said that the reality of Africa would necessitate that construction be tolerated while at the same time emphasizing the need for better maintenance.

17. The representative of Cameroon said that a lot of fertile productive areas needed to be reached with new roads, and that donors will have to continue to support both construction and maintenance.

18. The Moderator (World Bank) said there was no easy solution to the issue; but that especially in the case of Cameroon where economic growth has been quicker than in any other country in the region, the inclusion of a construction component in the loan package was justifiable.

19. The representative of the Central African Republic said much sensitization would be required throughout Africa on the importance of road maintenance if decision makers are to support the cause of maintenance in budgetary terms.

20. The representative of Ghana (Harry Pappoe) made the point that, as countries could not continue to build new infrastructure to improve agricultural production, and low-cost roads would satisfy such demand, it was time that a decision was made in Africa to freeze construction of all new roads of high standard and to reassess the possibility of reallocating funds to maintenance.

21. The representative of the TRRL (R. Robinson) responding to the issues raised by participants, said that:

(a) He agreed with the statement that a track would normally be sufficient to provide access to fertile areas for agricultural development, rather than an engineered highway.

(b) New roads are never considered economically viable if no funds are available for maintenance, since the high cost of operating vehicles on unmaintained roads would make construction unjustifiable.

(c) In cases of limited resources, spreading the available maintenance over the whole network would mean no network after 5 years, while maintaining half of the network properly could mean that the country would at least retain that half of the network.

How much should we spend on maintenance and what are the priorities?

22. In presenting his paper on the evaluation of the economic priorities of highway maintenance, Mr. Clell Harral of the World Bank stated that more than US$ 10,000 million is spent each year on highway construction and maintenance by governments in the developing countries in Africa, Asia and Latin America, and the costs for vehicle operation borne by road users is a much larger magnitude, tipically 8- to 10- times those borned by the government. The data do not permit one to distinguish exactly how much of government outlay is spent on maintenance and how much on new construction, but it is clear that, at least until very recently, new construction has claimed much larger resources than maintenance in most African countries.

23. In North America and Europe, high traffic volumes, high values attached to motorists travel time savings and relatively plantiful capital dictate high design standards and high maintenance standards. With several thousand vehicles per day, even minute savings in operating costs of the vehicle justify very large expenditures to maintain the road in like-new condition. Thus, until recently, very little attention has been given in the scientific literature to the problem of determining economic levels of road maintenance. But circumstances in developing countries are different -- traffic volumes are low, incomes and values attached to travel time savings are low, and above all there is a shortage of financial resources in general and foreign exchange in particular.

24. The severe competing demand for limited resources dictates that African and other developing countries pay more attention to the economic design of highways and maintenance programmes. But how is one to estimate the economic return on maintenance outlays? What is the benefit to society of another dollar or franc spent on maintenance compared to another dollar spent on new roads? Is it more economical to spend a bit more money to construct a stronger pavement initially thereby permitting the use of larger, more economic vehicles and saving future outlays on economizing on the initial construction but restricting vehicle axle loads and paying more in the ways of maintenance and upgrading cost later on, when uncertainties about traffic growth will have been resolved? How much, or how little, should one spend to maintain paved roads and how much to maintain gravel and earth roads? Does it matter much if maintenance outlays are postponed during years of financial stringency?

25. These are important questions which have been with us for a long time-but answering them is more important than ever today. It was to answer these questions that more than 15 years ago the World Bank initiated what has since become a major programme of collaborative research on highway design and maintenance standards. Although all of these questions cannot yet be answered in a fully satisfactory, scientific manner, some very substantial progress has been made, as discussed below.

26. He then summarized some significant World Bank funding of some 20 to 25 highway projects each year. In the fiscal year ending June 30, 1977, 20 projects were approved involving Bank loans or IDA credit totalling US$7,370 million 1/. Substantial highway maintenance components were included in 14 of these projects, while the remaining 6 projects were constituted primarily of new construction components and for all of the new construction components. The rate of return for the maintenance components averaged 86 per cent per annum with a range from 14 to 154 per cent, while the rate of return for new construction averaged 41 per cent, with a range from 13 to 119 per cent.

27. Such high rates of return should not be surprising. It is simple common sense that the annual benefit which would yield a return of 41 per cent for new road construction costing, say, $350,000 per kilometer would calculate as a much higher return on the much smaller amount of

maintenance necessary to keep that road functioning reasonably well once the initial investment has been sunk. The inference that one draw - that maintenance activities tend to have a much higher economic return than new construction - is absolutely correct so long as maintenance outlays are kept as low as they have been in most developing countries. The further inference is that some shifting of funds to road maintenance even at the expense of new investment in roads or other sectors is of utmost importance if one is to obtain maximum benefit from available resources.

28. One need add only a few small words of caution. High overall or average rates of return can make some components which individually have a much lower or even negative return when one compares the incremental cost with the incremental benefit. One such example is the regravelling of very low volume roads where local conditions make this very costly, as examined below.

29. A further and more important caveat is that maintenance activities are difficult to administer. They are notoriously prone to inefficiency with a high percentage of the budget being used to support administration and the payrolls, and relatively little of the budget actually meeting the direct expenditures on the road itself. Is it any wonder that Finance Ministers are reluctant to see further monies allocated to highway maintenance if they see that 50 per cent or more is consumed in administrative overhead? Inevitably one is forced to ask the question whether it is more resources which are required or simply more efficiency in the utilization of the existing maintenance budget. The correct answer, however, in the context of the very limited maintenance budget in most African ocountries today, is that a good measure of both is required - both more funds for maintenance and greater efficiency in their utilization. Mr. Harral then noted that others at the seminar would address the important issue of how to improve the efficiency of maintenance operations, while he would address the issue of how much money should be spent on maintenance and the relative priorities of different expenditures, assuming varying levels of efficiency in execution.

30. In his presentation of the ADB paper on the Economic and Financial Aspect of head Mainteance, Mr. Hoya of the African Development Bank said that much of the ADB Group loans in the transport sector have gone to the road sub-sector as more and more of the recipient countries are developing their highway network to provide the basic infrastructure for the social and economic development of their countries. All in all, road transport is the predominant mode of transport due to its flexibility (from to village, village to town, market and main trunk roads) and the door-to-door movement of people and goods.[2]

31. While the importance of an adequate road infrastructure is generally recognized, ADB experience of late is that not much attention has been accorded maintaining the road asset to keep the roads in serviceable condition for the social and economic functions they were designed to perform. This stems from the ignorance, on the part of the authorities, of the economic significance of road maintenance. Consequently, budgetary provision for road maintenance is minimal and inadequate. However, the point must be stressed that adequate budgetary provision is necessary for the routine and periodic maintenance of the roads in order to preserve the capital asset and offer the serviceability upon which the original economic and technical justification was based. This amount is

dictated primarily by the type of road, the topographic and climatic conctions, population and economic activities directly affected by the particular road, volume and intensity of traffic.

32. Various agencies, notably, the British Transport and Road Research Laboratory (TRRL), have carried out various research on road maintenance in Africa and the IBRD has drawn up a computer programme on road maintenance. African countries only have to provide the necessary budgeting and applying all the techniques of road maintenance is of such significant importance that it should be considered a national priority.

DISCUSSION

33. In the ensuing discussion, the representative of Nigeria (Mr. Obembe) asked whether a measuring device had been developed for determining the roughness of gravel road surfaces, which could be used in all African countries on a uniform basis; and what level of surface roughness should be considered acceptable.

34. Mr. Harral of the World Bank said that countries around the world (Brazil, France, U.K., Australia, U.S.A.) had carried out, during the last 10-15 years, extensive experiments on roughness measurement instrumentation, and that a common International Road Roughness Index (IRI) had been developed to which all the different roughness measurements could be related . Guidelines for the proper conduct of road roughness surveys were being published by the World Bank in collaboration with the University of Michigan and several other of the world's leading research institutes.

35. He said further that the level of road roughness acceptable to any one country was not an easy matter to determine, as decision was influenced by budgetary constraints, operational policy in that country, the opportunity cost of capital, and local fund availability. However, with an insignificant investment for local validation, and the use of microcomputers, the Highway Design and Maintenance Model (HDM) developed by the World Bank could be made applicable to determine the investment priorities in developing countries.

36. The representative of Sierra Leone, Mr. Taylor Lewis wanted to know whether a model had been developed which related road-user benefits to the cost of maintaining roads, which would assist Government decision makers in allocating maintenance funds. Mr. Harral (World Bank) said that the HDM-III model provides this type of result.

37. The meeting then broke up with four working groups to discuss the problem of providing finance for road maintenance, and each group reported back to plenary as follows:

GROUP I

38. The Group believed road user taxes needed to be linked to road maintenance allocation. The Group also agreed that more external funds were required for equipment, spare parts and supplies. Toll roads could generate funds for maintenance and should be explored. Increasing road user taxes and providing incentives for staff to improve productivity; and the use of labour intensive methods were recommended. Foreign aid should be sought as a last resort and only to supplement local funds.

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GROUP II

39. The Group reported it was aware that the road maintenance budget was over extended, thus severely limiting its capability in providing recurrent costs. The political implication are enormous, and cannot be eliminated easily.

40. The options available are:

1. Intra-sectoral reallocation, by redirecting funds from new construction to maintenance, but not to the extent of abandoning construction altogether.

2. Savings within the maintenance organization by (a) eliminating wastage; and (b) avoiding engineering extravagance.

3. The importance of the training component of maintenance needs to be recognized.

GROUP III

41. This Group analysed the problem and decided that there were three aspects which were worthy of note:

1. Assessment of current situation and determining the best means available (to procure adequate funds); then utilize that method. The road fund appears the ideal method, provided government interference can be avoided.

2. The State should endeavour to increase the maintenance budget.

3. The role of foreign aid for periodic maintenance should be explored, but the government should be responsible for all routine maintenance activities.

42. The Group considered the permanent nature of road maintenance, and determined that States should exhaust all possibilities of utilizing local resources fully before seeking foreign assistance.

GROUP IV

43. The Group recommended that:

1. There should be an independent road budget;

2. Consideration should be given to increase road maintenance resources;

3. The amount of new construction should be reduced;

4. Foreign aid should be considered only as supplement to local resources;

5. Training and motivation of staff to improve efficiency;

6. An analytical accounting system should be used to assess equipment life, and to determine when to replace equipment.

44. The moderator stated that:

1. All Groups agreed that the road maintenance budget was inadequate and should be increased.

2. Road taxes should be devoted mainly to road maintenance.

3. Foreign aid should not be used for recurring costs, which should be covered by local funds.

4. A fully autonomous road fund should be established.

DISCUSSION

45. In ensuing discussion, the representative of Cameroon said taxes should not be increased, instead countries should make optimum use of available resources. The representative of Benin said available funds should be diverted to maintenance. While the Togo representative said all of the road taxes should be allocated to roads, and not just a proportion of it, another representative, from Benin said, in addition to new taxes and reallocation of funds from other heading, advantages of still other sources should be explored. A representative from Nigeria said increasing the fuel tax by a few cents per litre would be the best method to generate a lot of money for road maintenance.

46. The Chairman said the consensus of the discussion appeard to be that, since it would be extremely difficult to reallocate funds from other sources, revenues should be increased by means of additional taxes which should be put in the Road Fund.

Integration of Current and Capital Budgeting

47. Mr. L. Caramfalvi of the International Monetary Fund, in presenting his paper on current and capital budget integration, said that in some countries large-scale investment projects created a demand for budgetary resources for operations and maintenance that far exceeded the availability of resources. This led to deteriorating roads, dilapidated schools, and hospitals without medicines. Reforms were needed in the planning and budgetary process to set up an efficient machinery of resource allocation for current expenditure needs.

48. There was a demand in Africa for evaluating and forecasting the impact of government investment projects on operating and other recurrent expenditures with a view to bringing about organizational improvements conducive to the integration of investment generated recurrent expenditure estimates in the planning process.

49. He described what information was required for the evaluation and forecasting of investment: (i) generated recurrent expenditures; (ii) how the information should be used in the planning process; (iii) what organizational improvements were necessary for the establishment of an information system which would provide the Ministries of Planning and the Ministries of Finance with a continuous flow of information; and (iv) how to organize an efficient disbursement process.

DISCUSSION

50. In the ensuing discussion, the representative of Liberia stated that the IMF had influenced reductions of both the recrurrent and development budgets which affect salaries and supply procurement in many African countries; and yet there are always shortfalls in revenue. She asked what the remedy should be. The representative of the IMF said that external assistance would have to be sought to bolster short term shortfalls in revenue. African countries should try to negotiate with donors to secure external finance for recurrent expenditure, but only for a specified amount of time. If such attempts fail, then countries must make efforts to reduce development activity selectively.

51. The representative of Togo said that it was never easy to forecast recurrent costs of development projects far ahead because of external currency fluctuations over which the country had no control. Also projects were made to appear very attractive at first, but once a commitment had been made to implement it, all the hidden costs come out.

52. The representative of IMF stated that what the Fund termed "cover technique" was used to sell a project, which invariably failed to show all the recurrent expenditure at the design stage. He said countries should reject projects that did not explicitly identify and quantify the recurrent costs implications.

53. The representative of Sierra Leone enquired whether the IMF assists countries with the revenue aspect, or whether it confined its involvement only to cuts of expenditure.

54. The IMF representative said that IMF did in fact look at revenue generation, which under prevailing conditions was not possible to increase in many countries. But the collection of revenue has been problematic for many developing countries, because of inherent inefficiencies which would take time to improve.

55. When revenue could not be improved, expenditure must be reduced, even if there was external aid in the form of grants, which is a temporary solution. Borrowing is justified only if the returns are attractive, but some investments that look attractive may end up losing money and hence call for caution.

56. Mr. Harral of the World Bank said that in the case of roads, it was not so much the inadequate revenue, but the serious imbalance that exists between expenditure for new infrastructure and maintenance that was problematic. Governments spend two thirds of available funds on new construction and only a third on maintenance, which was not sufficient to protect their investment. A much better allocation of the existing road budget was called for.

57. The representative of Togo said that the theory of the "r" coefficient, which the IMF had described earlier as a link between investment and recurrent cost was merely an intellectural exercise that would be difficult to apply in Africa to determine budgetary provision for road maintenance.

58. The IMF representative replied that it was indeed a new theory, and needed lots of data to be useful in developing countries, but he also noted that it had been applied successfully and usefully in some African countries.

Ways to improve budgetary control/disbursement

59. The representative of the IMF, during his second lecture on reduction of the irregularity of flow of funds, provision of easier access to foreign exchange for spare parts, fuel and bitumen; and the role of the revolving fund; said that a close relationship was called for between the Ministries of Planning and Finance on the one hand, and the technical Ministries (executing agencies) on the other.

60. It was not uncommon for a Ministry of Finance to block disbursement altogether and withholding allocated funds during the latter months of the fiscal year. Technical ministries should not be made to suffer because of the inefficiencies of the Ministry of Finance. By the same token, Technical Ministers should improve their record of monthly cash flow requirements.

61. The seminar then broke up into four working groups to discuss planning and budgeting, and each of the four groups reported back to plenary as follows:

GROUP I

62. This Group said it had discussed the chronic financial problem faced by road administrations. Budgets were not allocated in time in many countries, and disbursements were irregular, thus creating constraints which in turn delayed maintenance activities. At the same time, large construction projects were being implemented.

63. To ensure a constant inflow of funds, better national programming was necessary to decrease the number and magnitude of new projects, when such major construction projects affected maintenance performance.

64. The Group recognized the adverse influence of political pressure and recommended the setting up of autonomous agencies that could resist such pressure.

GROUP II

65. Group two recognized the irregular flow of funds for maintenance activities, but was split on measures to improve the situation.

66. One sub-Group recommended the establishment of a fund solely for road maintenance, with the proviso that any over-flow could be used in other sectors; while the second sub-Group doubted the wisdom of establishing such funds, because at the current precarious position of almost all government revenues it would be extremely difficult to maintain the independence of the autonomous agency operating any such fund.

67. The Group thought that facilitating access to foreign exchange for imported supplies and materials would improve road maintenance efficiency. Since foreign exchange was a major constraint, governments should make it easier for road administrations to acquire more of it.

68. The Group also agreed the revolving fund scheme could be very successful, if banks would contribute funds to meet shortfalls, where governments were not responsive enough,

69. Budget planning should make ample provisions at the outset so that governments could require donors to finance not only the capital budget but also the recurrent costs of a project.

GROUP III

70. This Group thought that the unit cost of maintenance needed to be revealed to governments so as to enable adequate budget provisions, and to improve the regularity of cash flows.

71. A revolving fund can only be effective if it was supported by the national budget, in addition to revenue from fuel taxes.

72. Local manpower should be employed to the extent possible, to minimize reliance on foreign exchange.

73. The Planning and finance ministries should work closely together to ensure budget integration.

GROUP IV

74. This Group said all countries were faced with balance of payment difficulties, exports were lower than imports, and therefore foreign aid

was required. Consequently, the sources of revenue should be, in in descending order, fuel tax, vehicle tax, the national recurrent bidget, foreign aid, and investment budget.

75. The establishment of a revolving fund should be given serious consideration.

DISCUSSION

76. In the ensuing discussion, Mr. Taylor Lewis of Sierra Leone said that as revenues obtained from road use were in local currency, while maintenance had a large component of foreign exchange, industrial countries should play a significant role in road maintenance, out of the profits they make from sale of vehicles.

77. Mr. Harral of the World Bank replied that the major benefits of proper road maintenance were in foreign exchange, because imporved road maintenance resulted in a lowering of imports of spare parts new vehicles and fuel.

78. He said road maintenance should be recognized as an import substitution industry with an economic return in excess of 100 per cent.

79. The problem was that the irregularity in the flow of funds has added to inefficiency of the management of maintenance.

Organization and management issue

80. In his talk on the organization and management of highway authorities, Mr. S. Demissie of the World Bank said that, although he had no specific system of management to recommend, the three most common items of concern in any administration were:

(a) Resources; (b) Organization; and (c) Management.

81. By resources he meant the local and foreign resources required for road maintenance and which derive from road user taxes and vehicle operating cost savings. Road user charges may not always be collected and/or allocated to maintenance.

82. Maintenance work is carried out either by contract, or by force account or a combination of the two. A good management system was one that provided an incentive system for its staff to improve productivity. A good equipment management system implied ensuring proper availability and utilization of equipment and avoiding abuses and wastage.

Country experience (Nigeria)

83. In his presentation of the Nigerian experience in contract maintenance, Mr. I. Osili, former Co-ordinating Director of Federal Highways said that although his country applied contracting methods

in the last few years only, it was considered highly successful. Maintenance by contract was more efficient if realistic bills of quantities are prepared,, and payments are based on outputs, instead of the cost plus method previously used, for instance, in Brazil. There may be a measurement problem for earth roads, and for routine maintenance.

Country report (Ghana)

84. In presenting the on-going highway management programme in Ghana, Mr. Harry Pappoe of Ghana Highway Authority said that in the early 1970's it became obvious that the road maintenance needs were not being adequately met as the roads continued to deteriorate while Government resources dwindled. A task force was set up with the assistance of the Canadian International Development Agency (C.I.D.A.) to study the road maintenance problem and evolve a road maintenance system that would be effective. The result was the introduction of a modern MAINTENANCE MANAGEMENT SYSTEM (MMS) in Ghana The implementation of th4 system coincided with the establishment of the Ghana Highway Authority in December 1974.

85. Under the system, every road maintained by the Ghana Highway Authority is classified at one of eight Maint4nance Levels of Service according to its surface characteristics and traffic volume.

86. An important feature of the M.M.S. is the development of the ANNUAL MAINTENANCE PROGRAMME which defines and documents the kinds and amounts of work which are estimated to be required to provide a desired quality level of service with consistency and uniformity.

87. Having accepted the annual programme, work schedules are prepared for field staff bi-weekly for executing works. The Road Overseer, who supervises field workers directly, reports daily on work done and resources (labour, materials and equipment) consumed. Reports submitted bi-weekly to the district office are compiled into the Performance Analysis sheet, which compares work done with the annual programme.

88. Although it took some time to overcome the inertia of the old system, by 1976 the M.M.S. was being operated throughout the country. The system was by no means fautless. The documentation required seemed too much for some supervisors. Some middle level and operating level personnel just could not or simply refused to understand the system.

DISCUSSION

89. In the discussion that followed, Mr. Taylor Lewis of Sierra Leone asked how small contractors would obtain equipment, or foreign exchange for the purchase of equipment and supplies.

90. Mr. Harry Pappoe said donors, and especially the World Bank furnished the foreign exchange component of the cost.

91. Mr. Osili said that during the oil boom many contractors bought their own equipment, with the Government supporting the foreign exchange applications. He added that in Nigeria, technical assistance, and accounting aid was provided by the Government to contractors.

92. The representative of the IMF, Mr. Garmfalvi said he was pleased to note that maintenance contracting was working in Africa even with budgetary constraints.

93. In the presentation of his paper on road administration in Niger, A. Cissé of the World Bank said that effective and efficient maintenance management was important, and that earth roads and routine maintenance should be carried out by direct labour, while periodic maintenance of paved roads may be contracted out in countries where the local contracting industry was readily available. But in Niger, because of the scarcity of the private contractors, road maintenance was performed by force account, with World Bank assistance. Maintenance was decentralized and regionalized, and supervised by government agencies and management consultants.

94. He said establishing parastatals for road maintenance was a good idea since it was flexible, provided incentive for staff, and ensured the regular payment of salaries.

Country paper - Puerto Rico

95. In presenting his paper on a Case Study of Management and Productivity Development in a Public Works Department, Dr. Oswald P. White, Senior Vice President of APC Skills Company, said that in January 1983, APC Skills undertook an assignment with the City of San Juan, Puerto Rico. The object of the assignment was to apply modern principles of management to certain operations of the Public Works Department, in an effort to improve the quality and volume of services provided to the public on a cost-effective basis. A series of steps were taken:

(i) Over 130 supervisors and managers received formal training on the basic tenets of good management, along with individual attention and training in their respective areas.

(ii) A total of 5 resources groups were formed, trained and monitored to effectively identify barriers to organizational performance.

(iii) A total of 7 management control systems were developed. The systems provide management with the information needed to plan, execute, report and evaluate the work within the departments.

(iv) A completely new customer service system was developed to provide satisfaction to tax payers who registered complaints with the department. Postcards are now sent out thanking the tax payer for his/her concern, and giving an estimated date of repair. The complaints are then fed into the operating systems to ensure their correction.

(v) A monthly status report, with public service indicators was developed and installed. The report gave the Major a clear, objective view of the Department of Public Works' performance, and the level of service being provided to the tax payers of the City of San Juan.

96. A total of three projects were undertaken with the San Juan Public Works Department over a period of twenty-one months. At the end of 1984, by the City's own evaluation, there was dramatic improvement in the volume and quality of service provided by the Public Works Department, in all areas impacted by the projects. In addition, annual savings of some $8.1 million were being realized. The cost of all three projects was $1.125 million return of over 7.2:1 on their investment.

97. The most significant improvement, however, was in the skills and attitude of the management supervision and work force. Post test on all diagnostics administered showed marked improvement in just about all areas. Behavioural observations showed a corresponding improvement in managerial and supervisory behaviour. Absenteeism had dropped significantly. There was good compliance to installed systems and procedure. The Mayor's monthly status reports which provide summary data on departmental performance indicated that services were being maintained at levels significantly higher than the base period.

98. The moderator commended the speaker for his excellent presentation of the Puerto Rico experience, and said that the work done by the consultants in San Juan has changed attitudes of municipal employees and resulted in better quality of service and improved quality of achievement.

Country Report - Cameroon

99. Mr. Cheuoua, the Director of Roads of Cameroon explained that the terrain in Cameroon varied to such an extent that all the different landscapes of Africa were represented in a small triangle of land. Inspite of this variation, Cameroon had had five years of successful operation of the road maintenance system.

100. He said nevertheless maintenance administration was still under government control, and there was room for improving efficiency by establishing an alternative management system, whereby each of three types of network can have their own independent autonomous agencies.

DISCUSSION

101. In the ensuing discussion directed at the last few speakers on management, the representative of Sierra Leone asked what were the methods that had contributed most to the major achievement in the San Juan expose.

101. Mr. White said it was not a single item but a confluence of factors that were responsible, such as changes in perception and attitude, and the very effective, environmental change. The problem was analysed; solutions determined, and measures were taken to change skill and attitudes.

102. The moderator then asked what the motivation and incentive was that had brought about changes in behaviour and attitudes, improving attendance from one day a week to five days. Mr. White said the high level of absenteeism had been an accepted fact, but it had to change mainly because of public outcry against it.

103. Also supervisors did not have the skills to supervise properly, skills changed and the supervisors were taught how to confront non-compliance.

104. Replying to a question from the representative of Ghana, Mr. White said the only incentive system used in the exercise was the possibility of keeping the job.

105. In response to another question from participants (Gambia), Mr. White said follow-up service was provided to guarantee that the situation did not revert to the former position. Besides the changes made were of permanent nature. The barriers to productivity had been removed in the form of new skills, tools, and a system of measurement of productivity had been instituted at the highest level.

106. A representative of the World Bank asked whether results elsewhere were as successful and prospects as optimistic.

107. Mr. White replied that their experience throughout the Carribean had convinced them that, although methods and results were essentially varied the deficit was not in human ingenuity but in human will.

Management information system

108. Mr. Morris described methods on how to gain more accurate management information with which to plan, monitor and control road maintenance programmes.

109. Road specialists, he said, should be able to respond to conditions of the road network, its degree of deterioration, the scope for efficiency improvement and the feasibility of reallocating highway budget.

110. Ms. Melody Mason said the road condition survey carried out throughout Central and West Africa indicated that networks were deteriorating very badly, to such an extent that some of responses may not reflect the true picture in African countries.

111. Participants raised the issue that the design of the questionnaires may have made it impractical and claled for some revision.

112. Mr. Harral discussed the questionnaire with participants in some detail and said he would send a revised questionnaire to countries. Replies can then be discussed at the forthcoming Fourth African Highway Maintenance Conference of the ECA.

113. Ms. Cynthia Cook of the World Bank speaking on the problems of financing road maintenance, said Governments were reluctant to allocate adequate funds for road maintenance on a regular basis, special taxes set up for roads worked at first, but their effectiveness diminished with time. Motor fuel funds remained static and inflexible when costs increased. The only remedy for countries like the Central African Republic was the establishment of an autonomous and independent "Road Fund", which was successively adjusted to offset the perpetual lack of funds for road maintenance; and was currently working satisfactorily. In conclusion, she said that for the Fund to remain effective:

(a) The person in charge must be appointed by the highest authorit of the land, and be paid out of the Fund and not from the State budget.

(b) It should have a superior legislative authority (committee) that would be representative of substantive ministries, but not include beneficiaries of the Fund.

(c) Should deposit its funds with a commercial bank and not with the national treasury.

(d) Should maintain a commercial type accounting system, with allowance for depreciation of equipment.

(e) Make an allowance for annual reviews, and

(f) Have an appropriate legislation.

Country report - Cameroon

114. In his presentation of the Cameroonian experience in the management of road maintenance equipment, Mr. P.M. Musonge, the Director of National Civil Engineering Equipment Pool said that the mechanization of road maintenance is now a reality in most developing countries today and Cameroon was no exception. Most countries have resorted to mechanization of maintenance to increase production and perhaps also to assure a more uniform product.

115. However, mechanization comes along with its own problems, among which the management of the fleet of maintenance equipment is preponderant. Most often management of the fleet necessitates the crea:ion of a specialized structure or unit to guarantee even a reasonable amoun: of success in this area.

116. This is the case in Cameroon whose National Civil Engineering Equipment Pool (N.C.E.E.P.) was created as a specialized organization for the procurement, maintenance, renewal and rental of road constructio equipment to the Department of Roads, Municipalities, Private Organizations and even individuals.

117. Problems: Before the creation of the NCEEP in 1967, administrative services and local public collectivities concerned with road problems had their own equipment, purchased through State funds or through their own budget. Most often than not, however, they did not have adequate workshops, appropriate tools, or qualified personnel for the maintenance of the equipment they had acquired with the result that the equipment was invariably abandoned when it broke down. The result was a terrible waste of scarce resources in view of the huge need for properly maintained roads in the country.

118. To remedy the situation the Cameroon Government decided to centralize the procurement and management of road maintenance equipment by putting it in the hands of a single organization.

Evolution of the statutory base of the NCEEP and its objectives

119. In effect it was by a Presidential decree of 27 December 1967, that the Pool of Heavy Public Works Construction Equipment was created, the beginning of its activities fixed for 1 January 1968. A subsequent Presidential decree of 23 June 1970 modified the organizational structur of the Pool, making it a parastatal.

120. Today, the National Civil Engineering Equipment Pool operates in accordance with the provisions of a third decreee of 7 March 1975, establishing it as an autonomous agency under the tutelage of the Ministry in charge of Public Works. Its principal objectives are the procurement, maintenance, renewal and retal of eqiipment to government agencies and to the private sector. It operations are authorized nation wide.

ORGANIZATIONAL STRUCTURE OF THE NCEEP:

121. The organizational structure of the NCEEP is as follows:

1. A management board of ten members, including a Chairman
2. A Directorate comprising of:
   (a) the sub-directorate of Administration

(b) the sub-directorate of Technical Affairs

(c) the Accounting Agency

121. The sub-directorates and the Accounting Agency are split up into several service units.

Personnel Management and Training

122. In his talk on an approach to manpower development for transportation organization within the framework of its improvement of dvelopment, Mr. Jean-Micahel Verdier of the Education Department of the World Bank said that in the Transportation Sector as in any other, managers should concentrate their activities on finding and implementing solutions to the two following questions: (a) How can the performance of the organization be improved? (b) How can the organization be developed? Certainly the future of any private enterprise - its bankruptcy, survival, or development - depends on the solutions implemented by its manager.

123. Although a Ministry of Public Works, a Port or Railway Authority is never allowed to go bankrupt, the consequences of its poor performance are even more serious than in a private enterprise: the slow or negative development of the country and wasting of public funds.

124. The prupose of the guidelines presented by Mr. Vadier is to provide a step-by step approach to manpower planning and development for a Ministry of Public Works, or Port or Railway Authority. The approach is part of a general study and implementation of a solution aimed at improving or developing and organization.

125. The flow-chart is usually used for this approach and when using such a flow chart, it should be borne in mind that:

(a) this approach is valid whether the problem is to improve to whole organization or only a part of it;

(b) the expertise required to study the improvement or development of an organization and to implement the approved action plan depends on the focus: the organization as a whole or only a function or a department. But generally the study requires the intervention of different types of specialists such as specialists in management, economists, engineers, financial analysts, and specialists in human resources;

(c) whereas the study for the improvement or development of an organization may be performed in a limited time, the implementation part may involve much more time because it will require reassignment, transfer of personnel, training activities and also changes in the behaviour of groups and individuals;

(d) because the approach is a continuous process, if the management system of the organization is second (data collection, analysis of the results, study and implementation of measures aimed at improving the situation), the work required to improve or develop an organization will be greatly reduced;

(e) the process presented in the flow-chart should not be performed occasionally but should be one of the permanent activities of the managerial staff of the organization.

Road Maintenance Survey of West and Central Africa

126. In presenting the findings of the World Bank Survey of road conditions in the West and Central African subregion, Ms. Melody Mason said that data from the survey on road conditions and current levels of strengthening and periodic maintenance indicate s serious deterioration of road networks in Africa. Already 44 per cent of classified road networks are in poor condition and a further 28 per cent are in fair condition, according to survey results. Little work appears to be carried out on preventive or restorative maintenance, for only 4 per cent of paved and 3 per cent of gravel roads were either resealed/regravelled, strengthened, rehabilitated or reconstructed each year in 1981 and 1982. If this level of activity continues roads will continue to deteriorate at an alarming rate.

127. The survey data suggest that more maintenance and strengthening could be carried out with existing funds. About half of the countries still spend over 50 per cent of road expenditures on upgrading of roads although the economic benefits of preventing the deterioration of existing roads are generally far higher than upgrading roads. Therefore, funds for upgrading need to be reallocated to strengthening and periodic maintenance activities. Economic priorities also need to be applied to the allocation of funds between periodic and routine maintenance, especially since expenditures on resealing and regravelling only averaged 17 per cent of total maintenance expenditure.

128. For about one-third of the countries surveyed, a reallocation of existing road expenditures would be insufficient to finance the backlog of strengthening and periodic maintenance works required. Therefore, unless further financial assistance is forthcoming, parts of the road network will be left to deteriorate. This situation is already occurring, for a large part of the earth road network already receives no maintenance in some countries. However, future reductions in the road network need to be carried out in accordance with economic priorities and should not occur in a haphazard way.

129. For most of the remaining two-thirds of countries, reallocation of existing road investment and maintenance funds could clear the large backlog of strengthening and periodic maintenance over the next few years. This would leave only major reconstruction and rehabilitation works to be carried out. Of course, before undertaking such a programme the economics of preventive and restorative maintenance would have to be determined for individual roads.

130. The survey results do not give clear indications of how efficiently maintenance funds are used, although there is evidence that productivity of equipment is very low. Financial factors contribute to this problem, particularly the scarcity of foreign exchange for spare parts, fuel, etc. Aging equipment fleets are also important in some cases, as is the shortage of supervisors and mechanics. But it is also true that equipment costing, budgeting and charging systems in most countries seriously understate if not ignore altogether the costs of equipment, so that economic pressures to ensure high utilization of this most expensive asset are abrogated.

131. Perhaps the most compelling conclusion to come out of the survey is that many critical management data were not provided, or were inconsistent, or clearly incorrect in some cases. Such problematic areas included estimates of the paved road network that required strengthening and periodic maintenance requirements estimates of depreciation of equipment costs and other force account costs, estimates of spare parts and fuel requirements, km of grading estimates of equipment requirements, and availability and utilization of requipment. All of these data should be readily available, accurate, and up to date if the road authority is to efficiently plan, programme, implement and monitor maintenance activities. Without such information road authority managers and aid donors have little basis for intelligant decision-making, and are simply left to grope in the dark.

Country Report - Ivory Coast

132. In his talk on the maintenance of roads in the Ivory Coast, Mr. Coulibaly of the Public Works Department said that the bulk of the Ivoirian network consisted of earth roads, and that the Government placed a lot of emphasis on the need to maintain these agricultural roads. The budget of the Ministry of Public Works, Telecommunications has doubled in the last four years. Maintenance responsibility is decentralized into maintenance districts.

133. Planning of roads maintenance activities is considered very important in the Ivory Coast, but due to the chronic and worsening shortage of funds, it was not possible to maintain the whole network every year, and thus emphasis is placed on roads of high traffic volume, roads linking the network to agricultural and especially cash crops areas, and roads that ensure the food self-sufficiency of the whole population.

134. The country had established a road fund for road maintenance which is replenished by Government from tax revenue and subsidies, but the current economic problem, and the lack of an incentive system for maintenance staff are areas that would require improvement.

REPORT OF THE TASK GROUPS ON ORGANIZATION AND MANAGEMENT

135. The Groups debated the following issues pertaining to the organization and mangement of road maintenance.

(a) Three intractable constraints on governmental force account organizations - - (i) the inability to attract and practicularly to retain sufficient numbers of competent staff; (ii) the absence of compelling incentives for efficiency; and (iii) the governmental "red tape" which eliminates flexibility and stifles initiative - - make it virtually impossible for a force account organization to be cost-effective.

(b) Some would argue that the way to overcome these problems is to break the public monopoly in provision of road maintenance services, by:

(i) contracting out a large part of road maintenance to private contractors;

(ii) reorganizing the remaining force account forces along commercial lines as an autonomous parastatal contractor (with managerial freedom in salaries, hiring and firing of personnel and incentives for performance);

(iii) tendering all road maintenance activities with the parastatal and private contractors competing on an equal basis;

(iv) reducing the role of the civil service per se to planning, programming tendering and supervising contracts.

(c) 1. Is the basic premise advanced by these specialists correct?

2. What about the proposed solution? (pros and cons)

3. What measures would have to be taken to implement such a solution in each African country? What obstacles would have to be overcome?

4. What are the implications of this solution for

- equipment management

- personnel management

- maintenance financing?

136. Back in Plenary, each Group chairman reported on the consensus of his group as follows.

GROUP I

(a) The Group had reached a consensus on the advantages of maintenance by contract, since it was efficient and provided some incentive for the staff. Contract maintenance would also provide an improved control system for the labour force, and autonomy for the organization.

(b) The drawback here was that contractors will not be able to work all year round; and that the work provided would attract only small contractors. It would be extremely difficult to successfully prevent Government interference.

(c) For the "maintenance by contract" method to be successful, Government commitment was required, in addition to availability of sufficient funds on a regular basis, setting up of a revolving fund could improve the financial problem.

GROUP II

137. (a) The group felt that the chronic shortage of skilled personnel was not as serious as it used to be in some African countries as some nationals have come home due to economic problems abroad.

(b) As far as staff incentives and government red tape was concerned, it will always be there unless and until there is a change of attitude of the responsible people.

(c) The proposed solutions were considered sound provided there was:

(i) Political will at decision-making level;

(oi) An autonomous authority is set up with commensurate powers to hire and fire personnel and procure materials and supplies;

(iii) Maintenance activity is contracted out in such a manner that a fair amount of competetiveness is provided between the private sector (contractor) and the force account administration.

GROUP III

138. This Group said it had analysed the road maintenance management problem and had concluded that there was lack of awareness of the seriousness of the maintenance problem by government officials. There was also a chronic shortage of resources for maintenance. The Group felt that periodic maintenance should be contracted out, while in the case of routine maintenance work force account methods should be utilized without ruling out other methods whenever deemed advantageous.

GROUP IV

139. This Group said it had analysed the problem thoroughly and had concluded that the cause of poor maintenance were the attitudes of the political authorities, and the poor management of road administration which did not provide sufficient incentives to its staff. Contracting maintenance work to the private sector on nine selective basis should improve the quality of work, its economy and efficieny. Direct labour should supplement contract maintenance whenever there is insufficient work to interest contractors, or whenever contractors are unavailable for lack of proper equipment.

140. The Group thought that too much contracting might lead to too much unemployment of the labour force, and create undesirable social problems. The appropriate measure would be to distribute work whereby routine maintenance is mostly done by direct labour. (Young engineers fresh out of school always needed direct-labour type of administration to obtain their initial experience and training before they went out to work on their own and this would thus be advisable). In the case of periodic maintenance, earth roads should be maintained both by contract and direct labour in a 60:40 ratio while in the asphalt roads, it would be advantageous to contract out most of the work.

141. The moderators, in summarizing the reporting of the task forces said that:

1. The political commitment of countries was of primary importance;

2. An incentive system was required to improve performance;

3. Autonomy of the maintenance organization was paramount to enable it to hire and fire;

4. Some aspect of competitiveness between the contractor and the force account administration was desirable; and

5. There should be adequate financial allocation, disbursed on a regular basis.

CONCLUSIONS OF THE SENIOR MANAGEMENT SEMINAR ON ROAD MAINTENANCE IN AFRICA

142. This seminar jointly organized by the World Bani, the African Development Bank, the Economic Commission for Africa and the Canadian International Development Agency, brought together senior managers from the ministries of Public Works, Planning and Finance of twelve African countries. The main objectives were to discuss the planning, financing and management of road maintenance. The principal purpose was to provide the participants an opportunity to become fully aware of current problems in road maintenance in various countries and to seek appropriate ways to improve the present situation.

143 From available data it is obvious that the road networks of sub-Saharan Africa have been deteriorating rapidly for several years. In 1982, only 28 per cent of the roads were in good condition, while 44 per cent were in poor condition. Current levels of maintenance activity indicate that the situation is probably worse at the present time. To restore the road network to an optimal condition would require a very considerable investment currently estimated at about 15 billion US dollars for all sub-Saharan Africa countries.

144 A serious debate and useful exchange of experience among the participants (African managers and representatives of donor institutions) led to agreement on the seriousness of the situation and to the following conclusions.

A. Analysis

145. A detailed examination of the present situation showed that the bas c causes of the current problems are:

1. Inadequate funding for road maintenance,
2. Inefficient utilization of available funds and resources,
3. Lack of understanding of the importance of road maintenance,
4. Lack of trained and experienced personnel at all levels,
5. Lack of incentives for maintenance staff.
6. Lack of skill in the field of road management system.

B. Conclusion

146 The conclusions of the seminar center around two main themes: road maintenance financing, and the organization and management of road maintenance.

1. Financing

147. The improvement of road maintenance requires:

- preparation of multi-year programmes reflecting maintenance needs, based on the definition of a priority network in relation to the economic requirements of national development.

- provision of an adequate budget for the selected network.

- assurance of the regular availability of funds exclusively to meet road maintenance needs.

- This would require:

- a better distribution of the funds allocated to road investments in favour of maintenance.

- allocation of an adequate share of tax revenues to the maintenance budget, and an increase wherever they are not sufficient to cover maintenance needs.

- setting up sufficiently flexible financial management structure so that the available funds can be used efficiently (creation, continuation or improvement of Road funds, establishment of revolving funds, etc.).

- seeking external assistance to complement national efforts, especially to obtain needed foreign exchange.

- greater co-ordination of sector strategies and programmes among the different donor institutions.

2. Organisation and management

148. Improvement in the present situation will require:

- greater political will to consider road maintenance as a priority activity.

- increased autonomy for the management of road maintenance organizations in particular for personnel management, procurement and day-to-day operations.

- implementation and development of incentives for more efficient performance.

- promotion of increased competition between the different modes of maintenance execution, giving a larger place to private contractors.

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- establishment and improvement of equipment management systems, personnel management systems, management information systems and performance monitoring systems.

3. Road maintenance survey data

149. Recognizing the importance of a data base for road maintenance the participants agreed to complete a revised road maintenance questionnaire to be sent to the World Bank before the end of August.

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